

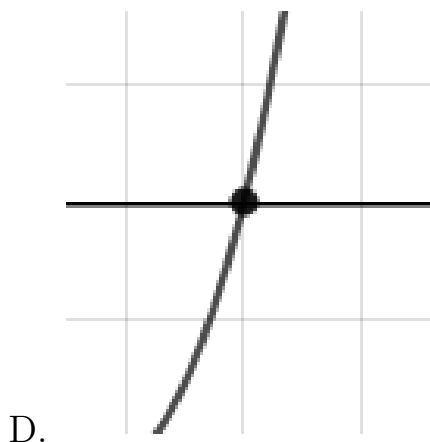
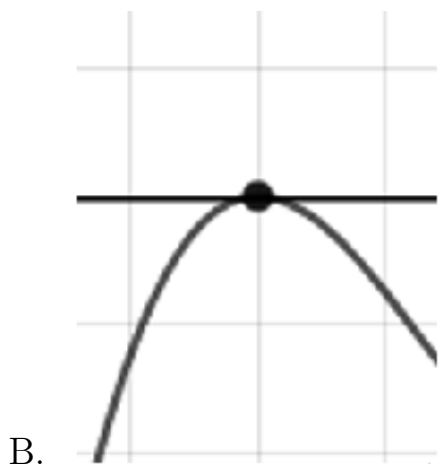
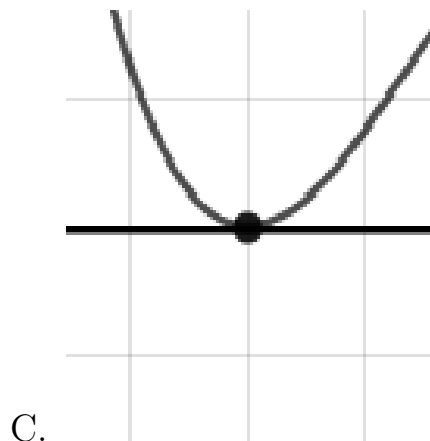
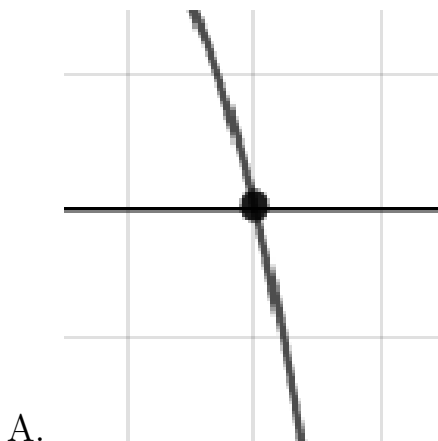
1. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form  $ax^3 + bx^2 + cx + d$ .

$$\frac{7}{3}, 1, \text{ and } \frac{-7}{2}$$

- A.  $a \in [0, 14], b \in [28, 31.1], c \in [12, 15], \text{ and } d \in [-57, -44]$   
B.  $a \in [0, 14], b \in [0.9, 2], c \in [-60, -55], \text{ and } d \in [-57, -44]$   
C.  $a \in [0, 14], b \in [0.9, 2], c \in [-60, -55], \text{ and } d \in [48, 54]$   
D.  $a \in [0, 14], b \in [40.6, 41.8], c \in [82, 89], \text{ and } d \in [48, 54]$   
E.  $a \in [0, 14], b \in [-4.2, 0.2], c \in [-60, -55], \text{ and } d \in [-57, -44]$
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2. Describe the zero behavior of the zero  $x = -4$  of the polynomial below.

$$f(x) = -4(x + 4)^5(x - 4)^8(x - 9)^3(x + 9)^4$$



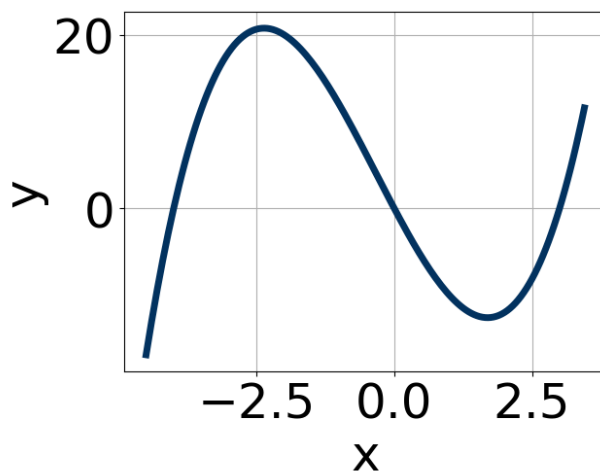
E. None of the above.

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3. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form  $x^3 + bx^2 + cx + d$ .

$$5 - 2i \text{ and } 1$$

- A.  $b \in [-14, -9]$ ,  $c \in [37, 44]$ , and  $d \in [-34, -23]$   
B.  $b \in [2, 13]$ ,  $c \in [37, 44]$ , and  $d \in [27, 33]$   
C.  $b \in [-2, 6]$ ,  $c \in [-2, 5]$ , and  $d \in [-6, 1]$   
D.  $b \in [-2, 6]$ ,  $c \in [-6, -5]$ , and  $d \in [0, 8]$   
E. None of the above.

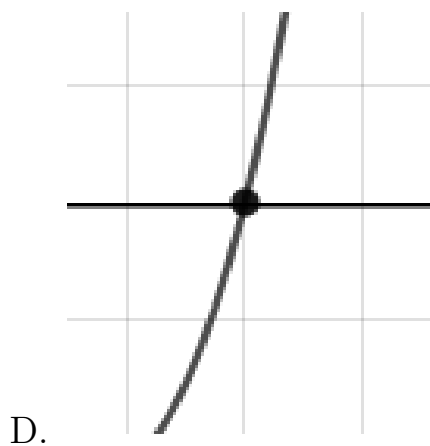
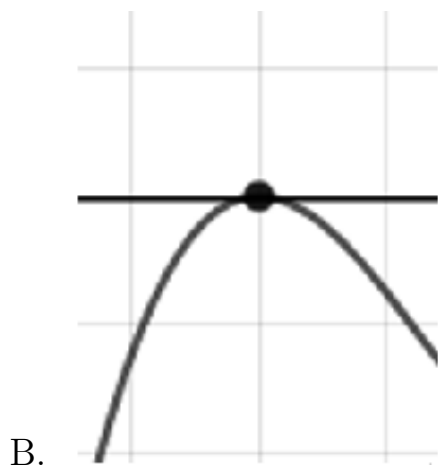
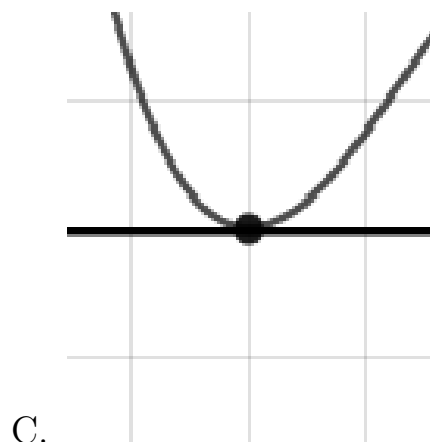
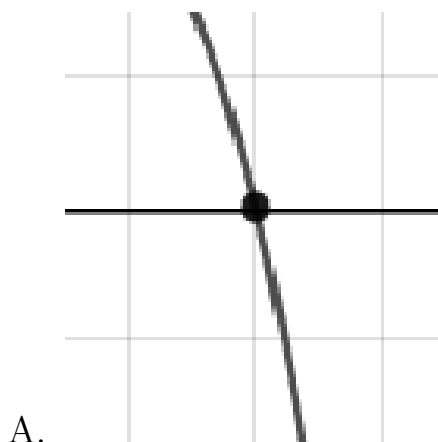
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4. Which of the following equations *could* be of the graph presented below?



- A.  $-11x^6(x+4)^{11}(x-3)^5$   
B.  $7x^9(x+4)^{11}(x-3)^9$   
C.  $-6x^7(x+4)^5(x-3)^5$   
D.  $6x^8(x+4)^4(x-3)^{11}$   
E.  $8x^8(x+4)^5(x-3)^7$

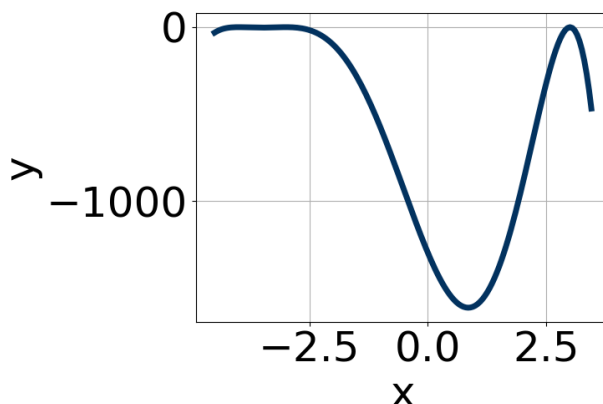
5. Describe the zero behavior of the zero  $x = -8$  of the polynomial below.

$$f(x) = 4(x - 7)^5(x + 7)^3(x + 8)^9(x - 8)^8$$



E. None of the above.

6. Which of the following equations *could* be of the graph presented below?



- A.  $16(x+4)^{10}(x-3)^{10}(x+3)^6$
- B.  $-4(x+4)^4(x-3)^{10}(x+3)^4$
- C.  $14(x+4)^{10}(x-3)^4(x+3)^{11}$
- D.  $-7(x+4)^4(x-3)^{11}(x+3)^7$
- E.  $-10(x+4)^{10}(x-3)^6(x+3)^{11}$

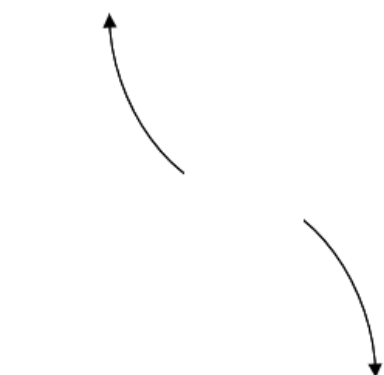
7. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form  $x^3 + bx^2 + cx + d$ .

$$5 - 2i \text{ and } 4$$

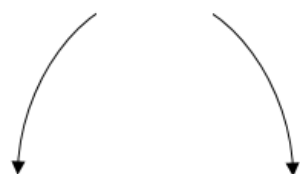
- A.  $b \in [-17, -13], c \in [69, 79], \text{ and } d \in [-116, -115]$
- B.  $b \in [-7, 5], c \in [-5, 6], \text{ and } d \in [-9, -2]$
- C.  $b \in [-7, 5], c \in [-13, -6], \text{ and } d \in [10, 27]$
- D.  $b \in [14, 16], c \in [69, 79], \text{ and } d \in [114, 119]$
- E. None of the above.

8. Describe the end behavior of the polynomial below.

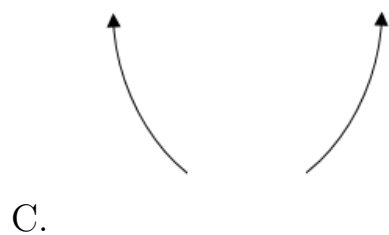
$$f(x) = -9(x+2)^4(x-2)^5(x-6)^5(x+6)^7$$



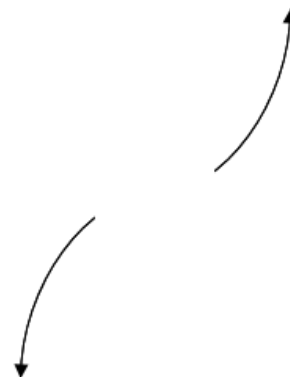
A.



B.



C.

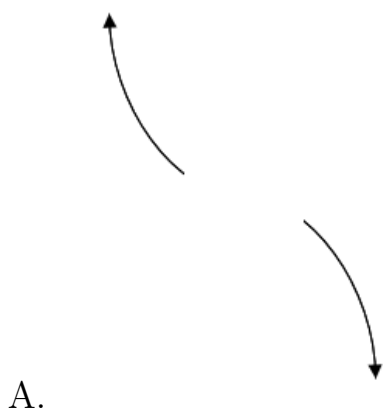


D.

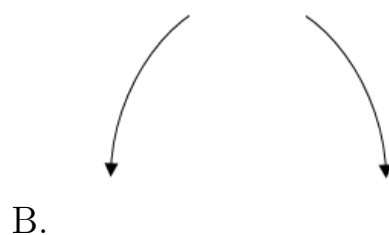
E. None of the above.

9. Describe the end behavior of the polynomial below.

$$f(x) = 9(x + 3)^2(x - 3)^3(x - 4)^4(x + 4)^5$$



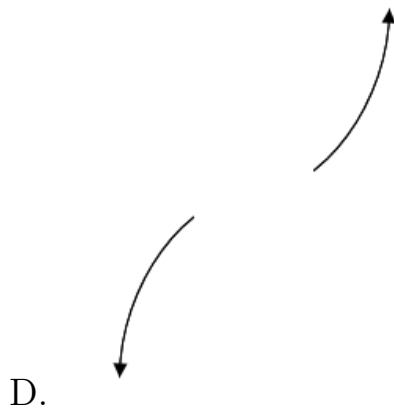
A.



B.



C.



E. None of the above.

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10. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form  $ax^3 + bx^2 + cx + d$ .

$$\frac{-7}{4}, \frac{-7}{5}, \text{ and } 4$$

- A.  $a \in [20, 23], b \in [-144, -139], c \in [301, 307],$  and  $d \in [-196, -195]$
- B.  $a \in [20, 23], b \in [9, 18], c \in [-207, -199],$  and  $d \in [189, 200]$
- C.  $a \in [20, 23], b \in [-19, -15], c \in [-207, -199],$  and  $d \in [-196, -195]$
- D.  $a \in [20, 23], b \in [-92, -78], c \in [-26, -20],$  and  $d \in [189, 200]$
- E.  $a \in [20, 23], b \in [-19, -15], c \in [-207, -199],$  and  $d \in [189, 200]$
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